

Patent Appn.: 10/707,607 February 2006 Claims amendment Inventor: Joseph Franklin Frasca
Examiner: Stephen Johnson Art Unit 3641

CLAIMS AMENDMENT**RECEIVED
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What is claimed is:

[Claim 1](Cancelled)

[Claim 2] (Cancelled)

[Claim 3] (Cancelled)

[Claim 4] (Cancelled)

[Claim 5] (Cancelled)

[Claim 6](New) Electromagnetic propulsion devices comprising:

a barrel; and

a barrel cavity in said barrel which extends the length of the barrel and that has:

a breech end opening at one barrel end, and

a muzzle end opening at the second barrel end, and

throughout said cavity's length a uniform right cross section to said cavity's central axis; and

armatures, that are:

in or for insertion into the breech end of said barrel cavity, and

for propulsion through the barrel cavity towards and out of the cavity's muzzle end,

and

each said armature has a central axis that, when in the barrel cavity, is close and parallel or

coincident with the barrel cavity's central axis, and

each said armature has:

all right sections taken said armature's central axis smaller than said barrel cavity's uniform

right section, and

a portion of said armature's right sections similar to said cavity's uniform right section in

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24 **shape and slightly undersized thereof to permit unobstructed traverse of the barrel**
25 **cavity by said armature; and**
26 **two barrel rails which are:**
27 **power rails located in the walls of the barrel cavity, and**
28 **oriented parallel the cavity central axis, and**
29 **located across the barrel cavity from each other, and**
30 **each said power rail has:**
31 **a connection means at said rail's breech end for attachment of outside circuitry to an**
32 **outside power source, and**
33 **a continuous surface said rails length that is part of the barrel cavity surface and**
34 **said surface extends the length of the barrel cavity through which an**
35 **armature uses said power rail for propulsion in the device; and**
36 **said barrel power rails divide the barrel cavity wall into two segments whose barrel**
37 **cavity surface boundaries are:**
38 **said muzzle end and said breech end of the barrel cavity, and**
39 **said barrel cavity surfaces of said barrel power rails and**
40 **cavity axis parallel rays therefrom to said cavity's breech**
41 **end and muzzle end; and**
42 **a wall conductor assembly comprised of:**
43 **a barrel bus which is located in one of said barrel cavity wall segments and**
44 **therein oriented parallel, adjacent, and in close proximity one of said power**
45 **rails and electrically insulated from said power rail, and**
46 **a plurality of equal length parallel wall conductors in the barrel cavity wall segment**

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47 **with said barrel bus and**
48 **said wall conductors are spaced from each other along the length of said barrel**
49 **bus and**
50 **each wall conductor of said plurality of wall conductors is:**
51 **at or very near the barrel cavity surface of said cavity wall segment, and**
52 **physically and electrically continuous with and perpendicular to said barrel**
53 **bus, and**
54 **each said wall conductor:**
55 **extends from the barrel bus to close proximity without contact with the**
56 **barrel power rail distal said barrel bus whereat said wall conductor**
57 **has and is electrically continuous with, an electrical contact means**
58 **located at the barrel cavity through an opening into said cavity, and**
59 **beyond the barrel bus is electrically insulated from said wall**
60 **conductor's surroundings except at said electrical contact means; and**
61 **each of said armature is further comprised of:**
62 **a propulsion bus that, with the armature in the barrel cavity, is oriented therein:**
63 **to travel in close proximity to the wall conductors of said wall conductor**
64 **assembly and to carry electric current in a direction that is:**
65 **perpendicular to said cavity axis, and**
66 **perpendicular to the direction of barrel cavity traverse by said**
67 **armature, and**
68 **parallel to the orientation of said wall conductors of said wall**
69 **conductor assembly, and**

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70 **said propulsion bus of an armature in the barrel cavity extends**
71 **from proximal the barrel power rail distal said barrel bus, whereat it has**
72 **electrical continuity with propulsion bus-aft shunt circuit means, and**
73 **therefrom to the cavity surface of the barrel power rail proximal said barrel**
74 **bus whereat said propulsion bus has surface that has continuous**
75 **electrical continuity with said power rail's cavity surface and said**
76 **continuous electrical continuity is continuous sliding electrical**
77 **continuity with armature movement in the barrel cavity, and**
78 **said propulsion bus of an armature in the barrel cavity,**
79 **with exception of above said electrical continuity with said propulsion**
80 **bus-aft shunt circuit means and said electrical continuity with the**
81 **barrel power rail proximal said barrel bus,**
82 **is electrically insulated from direct electrical continuity with all other**
83 **conducting elements of the barrel and armature, and**
84 **said propulsion bus of an armature in the barrel cavity:**
85 **provides continuous electrical continuity between said barrel power**
86 **rail proximal said barrel bus and said propulsion bus-aft shunt circuit**
87 **means and,**
88 **with power supplied to said power rails,**
89 **provides a current path between said power rail proximal said barrel**
90 **bus and said propulsion bus-aft shunt circuit means; and**
91 **a forward current shunt that, with the armature in the barrel cavity, is located**
92 **forward said armature's propulsion bus in the direction of cavity**

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93 **traverse by said armature and**
94 **proximal the barrel power rail that is located distal said barrel bus of**
95 **said wall conductor assembly, and**
96 **said forward current shunt has surface in the armature surface proximal the barrel**
97 **cavity wall with said wall conductor assembly and**
98 **said surface has continuous electrical continuity with said contact means of said wall**
99 **conductors at the instant barrel cavity location of said surface of said**
100 **forward current shunt and said continuous electrical continuity is continuous**
101 **sliding electrical continuity with armature movement in the barrel cavity,**
102 **and**
103 **said forward current shunt also has surface which, with the armature in the barrel**
104 **cavity, has continuous electrical continuity with the cavity surface of said**
105 **proximal power rail and said continuous electrical continuity is continuous**
106 **sliding electrical continuity with armature moment in the barrel cavity; and**
107 **said wall conductor assembly has additionally, with an armature in said barrel cavity,**
108 **forward wall conductors comprised of:**
109 **the group of one or more consecutive wall conductors of said wall conductor**
110 **assembly whose contact means at any instant have said electrical continuity**
111 **with said forward current shunt surface; and**
112 **said forward current shunt, of an armature in the barrel cavity, provides,**
113 **via said shunt's surface with continuous electrical continuity with said**
114 **proximal power rail and said shunt's surface with continuous**
115 **electrical continuity with said forward wall conductors,**

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116 **continuous electrical continuity between said power rail and said forward**
117 **wall conductor of said wall conductor assembly, and,**
118 **provides, with power supplied to said power rails,**
119 **a current path between said proximal power rail and said forward**
120 **wall conductors of said wall conductor assembly and**
121 **said forward current shunt of said armature in said barrel cavity,**
122 **except for said continuous electrical continuity with said forward wall**
123 **conductors and said continuous electrical continuity with said**
124 **proximal power rail,**
125 **is electrically insulated from direct electrical continuity with the rest of the**
126 **armature and barrel; and**
127 **an aft current shunt that, with the armature in the barrel cavity, is located**
128 **aft said armature's propulsion bus in the direction of cavity traverse by said**
129 **armature and**
130 **proximal the barrel power rail that is located distal said barrel bus of said**
131 **wall conductor assembly, and**
132 **said aft current shunt has surface in the armature surface proximal the barrel**
133 **cavity wall with said wall conductor assembly and**
134 **said aft shunt surface has continuous electrical continuity with said contact means**
135 **of said wall conductors at the instant barrel cavity location of said aft current**
136 **shunt surface and said continuous electrical continuity is continuous sliding**
137 **electrical continuity with armature movement in the barrel cavity; and**
138 **said wall conductor assembly has additionally, with an armature in said barrel cavity,**

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139 **aft wall conductors comprised of:**
140 **the group of one or more consecutive wall conductors of said wall conductor**
141 **assembly whose contact means at any instant have said electrical**
142 **continuity with said aft current shunt surface; and**
143 **said aft current shunt, of an armature in said barrel cavity provides,**
144 **via said continuous electrical continuity with the propulsion bus-aft**
145 **shunt circuit means and said continuous electrical continuity with**
146 **said aft wall conductors,**
147 **continuous electrical continuity between said propulsion bus-aft shunt circuit**
148 **means and said aft wall conductors of said wall conductor assembly,**
149 **and, with power supplied to said power rails, provides**
150 **a current path between said propulsion bus-aft shunt circuit means and said**
151 **aft wall conductors of said wall conductor assembly, and**
152 **said aft current shunt of an armature in said barrel cavity,**
153 **except for said continuous electrical continuity with said aft wall**
154 **conductors and said continuous electrical continuity with said**
155 **propulsion bus-aft shunt circuit means,**
156 **is electrically insulated from direct electrical continuity with the rest of the**
157 **armature and barrel; and**
158 **said barrel bus of said wall conductor assembly, with an armature in the barrel**
159 **cavity, provides continuous electrical continuity between said forward**
160 **wall conductors and said aft wall conductors of said wall conductor**
161 **assembly and with power supplied to the power rails and an armature**

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162 **in the barrel cavity, said barrel bus provides a current path between**
163 **said forward wall conductors and said aft wall conductors; and**
164 **in which with**
165 **an outside power source attached to the connection means of the two power rails**
166 **and an armature of the claimed device in or inserted into the breech end of said**
167 **barrel cavity where said power rails and said wall conductor assembly are extant,**
168 **the electric current path in the device effecting electromagnetic propulsion of the**
169 **armature in the barrel cavity toward the muzzle is extant and remains so while the**
170 **armature is completely in the barrel cavity where said rails and said wall conductor**
171 **assembly are extant; and**
172 **the magnetic fields of the electric currents in:**
173 **said barrel power rails and**
174 **said forward wall conductors, and**
175 **said aft wall conductors and**
176 **said barrel bus of said wall conductor assembly,**
177 **interact with the electric current in said propulsion bus of said armature creating**
178 **the forces therein with barrel cavity axis parallel, barrel muzzle directed**
179 **components which propel said armature in the barrel cavity towards the**
180 **barrel muzzle.**

181

- 1 **[Claim 7] (New) Electromagnetic propulsion devices as claimed in claim 6 wherein, with an**
- 2 **armature in the barrel cavity, the propulsion bus-aft shunt circuit means is comprised of:**
- 3 **an additional barrel rail which is:**

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4 **located parallel, adjacent, and in close proximity to said barrel power rail**
5 **distal said barrel bus, and electrically insulated therefrom, and**
6 **along the length of said additional barrel rail there is continuous barrel cavity**
7 **surface; and**
8 **additional surface on said aft current shunt and said additional surface on said aft current**
9 **shunt has continuous electrical continuity with said barrel cavity surface of said**
10 **additional barrel rail and said continuous electrical continuity is continuous sliding**
11 **electrical continuity with armature movement in the barrel cavity; and**
12 **additional surface on the propulsion bus and said additional surface is proximal said**
13 **additional barrel rail and said surface has continuous electric continuity with the**
14 **cavity surface of said additional barrel rail and said continuous electrical continuity**
15 **is continuous sliding electrical continuity with armature movement in the barrel**
16 **cavity.**

17

1 **[Claim 8] (New) Electromagnetic propulsion devices as claimed in claim 6 wherein the**
2 **propulsion bus-aft shunt circuit means is comprised:**
3 **an electric current bus in the armature between and connecting the armature aft current**
4 **shunt and the armature propulsion bus.**

5

1 **[Claim 9] (New) Electromagnetic propulsion devices as claimed in claim 6 wherein:**
2 **said barrel cavity has a twist so that consecutive barrel cavity right sections,**
3 **when taken at incremental increasing muzzle directed distances from a point at the**
4 **breech on the cavity axis, have like shape and area but have incremental increasing**

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5 **angular displacement about the cavity axis from the initial point and said right**
6 **cavity section angular displacement per unit axial distance is constant and the**
7 **barrel cavity thereby imparts a rotation about said axis to an armature of the device**
8 **traversing said cavity; and**
9 **said armatures have structure and surfaces**
10 **with the same twist about the armature axis as the barrel cavity twist in angle**
11 **displacement per unit axial distance so as to permit proper function of said**
12 **armature while rotating about said armature's axis while moving in the barrel**
13 **cavity and during unobstructed traverse of the barrel cavity by said armature while**
14 **rotating about said axis; and**
15 **said wall conductors of said wall conductor assembly of said barrel with said twist are not**
16 **perpendicular to said barrel bus of said assembly; however said wall conductors**
17 **remain orthogonal the barrel cavity axis.**

1
2 **[Claim 10](New)**

3 **Electromagnetic propulsion devices as claimed in claim 6 wherein an armature is mounted**
4 **in the barrel proximal the barrel's breech end for release and propulsion in the barrel**
5 **cavity on application of sufficient power to the power rails.**
6

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Monday, February 13, 2006

Closing Comments:

Dear Examiner:

In response to the office letter of 11/22/2005, the original 5 claims relevant the elected species of patent application 10/707,607 have been cancelled and replaced by the forgoing 5 new claims # 6-10.

As pointed out in the office letter of 11/22/2005, the expression “similar... length” and “similar....location” make the claim indefinite. These expressions are not included in new claim 6 or new claim 7. Discussion of variation in the length of the power rails etc. can be found in the original specifications paragraphs 100-104.

The portion of claim 1 including “and the armature direction of traverse...” has been restated with armature changed to “armature’s” and the sentence restructured in new claim 6. See lines 62-69.

Aft wall conductors are defined in lines 138-142 of claim 6 as are forward wall conductors, lines 107-111.

The new claims 6-10 have appropriate introductory clauses.

In claim 7 (former claim 2) the surfaces on the aft current shunt and propulsion bus are now indicated as additional surfaces to differentiate from the surfaces used in the propulsion bus-aft shunt means from those surfaces of the aft current shunt and propulsion bus previously indicated in claim 6.

In claim 9 (former claim 4), lines 15 through 17, the clause noting the change in characteristics of the wall conductor assembly required in the barrel with a twist, might

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be removed if lines 51-53 of claim 6 where modified to "... , and physically and electrically continuous with said barrel bus and orthogonal said barrel cavity axis, and ...". A change I would make by additional amendment if permitted.

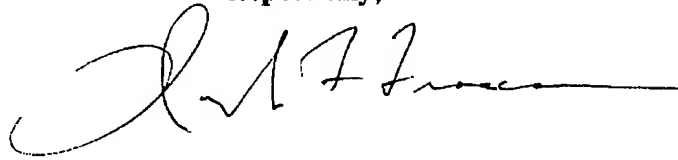
These claims do not use the word "its".

I hope you find the claims in this amendment acceptable.

On other matters, should I prepare a substitute specification and additional drawings, to make the application properly complete? Please advise.

Thank you for your attention.

Respectfully,

A handwritten signature in black ink, appearing to read "J. F. Frasca", with a long horizontal flourish extending to the right.

**Joseph F. Frasca
Inventor**